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CONSTRUCT VALIDITY OF THE CHILD PTSD SYMPTOM SCALE

A Thesis presented in partial fulfillment of requirements for the degree of Master of Arts

in the Department of Clinical Psychology

The University of Mississippi

REGAN W. STEWART

August 2012

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ABSTRACT

Increased research interest in post-traumatic reactions in children has led to a need for more accurate assessment measures to detect the presence of posttraumatic stress disorders (PTSD) in youth. Instruments designed to accurately capture symptoms of PTSD are needed in order to understand how children respond to stressful events, such as violence, abuse, war, and natural disasters. The current study attempts to address the need for valid and reliable instruments in childhood PTSD assessment research by investigating the psychometric properties of the Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Tredwell, 2001). Specifically, the study examines the factor structure of the CPSS, as well as its convergent and divergent validity.

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I. INTRODUCTION

Posttraumatic stress disorder was first included as a diagnostic category in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM III) in 1980. In 1987 the DSM-III-R added specific criteria for children and adolescents within cluster B "reexperiencing" criterion 1, (repetitive play) and cluster C "avoidance/numbing" criterion 4 (loss of recently acquired developmental skills). The DSM-IV (American Psychiatric Association, 1994) provided additional child criteria for cluster A "exposure" criterion 2 (agitation or disorganized thought in response to the traumatic stressor) and cluster B criterion 2 (frightening dreams without recognizable content) and criterion 3 (trauma-specific reenactment). These criteria remained unchanged for the latest revision of the DSM, DSM-IV-TR (American Psychiatric Association, 2000).

Increased research interest in and clinical awareness of post-traumatic reactions in children have led to an increase in the need for accurate assessment measures to detect the presence of posttraumatic stress disorders (PTSD) in youth. Instruments designed to accurately detect symptoms of PTSD are needed in order to understand how children respond to stressful events, such as violence, abuse, war, and natural disasters. A variety of methods have been used to study children's reactions to traumatic stressors; however, these varying methods are of varying quality and contributed to difficulty estimating the prevalence of PTSD in child

populations (Hawking & Radcliffe, 2006). Reliable estimation of the prevalence of PTSD in child populations is difficult due to considerable variance in the methodology of studies, including differences in the time since traumatic exposure, assessment methods used, and version of the Diagnostic and Statistical Manual (American Psychiatric Association, 1980; 1987; 1994; 2000) under which diagnoses were determined (Yule, 1999). Despite the challenge of accurate epidemiological identification, published rates of estimated lifetime prevalence of PTSD in the general child population range from 3 to 10% (Elklit, 2002; Gioconia et al., 1995). Studies of PTSD among high risk children (i.e., those who have been exposed to traumatic events) have found that prevalence rates vary greatly; however, research indicates that children from backgrounds that are likely to include exposure to traumatic events have a significantly higher prevalence of PTSD than children in the general population (Gabbay, Oatis, Silva, & Hirsch, 2004).

Traumatic events experienced in childhood have repeatedly been found to be associated with negative psychological consequences (Neubauer, Deblinger, and Sieger, 2007). Children who have experienced traumatic events can show signs of depression, anxiety, and PTSD (Foa & Rothbaum, 1998), increased instances of aggressive behavior, and an increase in attentional difficulties (Stern, Lynch, Oates, O'Toole, & Cooney, 1995; Costello, Erkanli, Fairbank & Angold, 2002). Childhood traumatic stress has also been shown to increase the risk of academic difficulties (Lipschiz et al., 2000), engagement in high-risk behaviors (Ethier, Lemelin, & Lacharite, 2004), an increased need of medical and mental health services, and involvement with child welfare and juvenile justice systems (Felitti et al., 1998). If left untreated, these difficulties may become chronic, producing negative effects that may continue into adulthood (Green et al., 1994; Sack, Clark, & Seeley, 1995). The potential serious long-term effects of traumatic stress

underscore the importance of appropriate and timely identification of children who suffer from these reactions. Research suggests that many children with PTSD go undiagnosed (Anderson, 2005; Earls et al., 1988; Kendall-Tackett et al., 1993; Makley & Falcone, 2010; Scheeringa, Zeannah, Myers & Putnam, 2003) and are thus not receiving needed services. In light of this, there is a critical need to obtain reliable and valid information concerning PTSD symptoms among traumatized children and adolescents (Silva, 2004).

Various instruments have been developed for PTSD diagnosis in children and adolescents, including self-report measures, clinical interviews, and structured diagnostic interviews. Although structured interviews have long been considered the optimal form of PTSD assessment (AACAP, 1998; Cohen, Mannarino, & Deblinger, 2006; Saigh, 1991), self-report measures hold certain advantages. In contrast to clinical interviews, self-report measures are relatively concise, involve minimal clinician time, and generally entail a shorter burden of administration. One potential drawback of self-report measures is the lack of clinical judgment; however, this limitation can be minimized if self-report measures are used as screening devices and are subsequently followed by a clinical interview (Foa, Cashman, Jaycox, & Perry, 1997; Spiegler & Guevremont, 2010). Furthermore, Meehl (1954) provided substantial evidence that actuarial methods consistently outperform trained experts in predicting a variety of important clinical phenomena. Concise self-report measures are particularly useful in times when there are not enough clinicians to evaluate each traumatized child individually, such as following a natural disaster. Research suggests that a significant percentage of children exposed to natural disasters develop PTSD symptoms (Bokszczanin, 2007; Hoven et al., 2005; La Greca, Silverman, Vernberg, & Prinstein, 1996; Thienkrua et al., 2006). Efficient identification of children with the

greatest risk for PTSD would allow available resources to be focused on those children who are most likely to be in need of services (Foa et al., 2001).

Although several self-report measures for children have been developed, there is no “gold standard” for a screening measure of PTSD in child populations (AACAP Practice Parameters, 2010). Currently, few well validated, DSM-IV-TR based standardized measures exist for children.

II. REVIEW OF AVAILABLE CHILD SELF-REPORT MEASURES OF PTSD

Trauma measures for children presented in this section include those that assess DSM-IV PTSD symptoms, are designed for use with children and adolescents, and have published psychometric information. The included trauma measures each provide a preliminary PTSD diagnosis, but are designed to be used as screening instruments, in conjunction with a subsequent interview. Psychometric properties have been described following guidelines for reliability coefficients as suggested by Cicchetti (1994): excellent, greater than 0.89; good, between 0.80 and 0.89; fair, 0.70 to 0.79; and poor, less than 0.70.

Child's Reaction to Traumatic Events Scale Revised. The Child's Reaction to Traumatic Events Scale Revised (CRTES-R; Jones, Fletcher, & Ribbe, 2002; Jones, 1995) is a 23-item self-report questionnaire designed to assess psychological responses to stressful life events in children ages 6 to 18 years. Children rate how often each item applies to them with items rated on a 4-point Likert-type scale from 0 (*Not at All*) to 5 (*Often*). The CRTES-R provides a PTSD diagnosis, total scale score, as well as three subscale scores: Intrusion, Avoidance, and Hyperarousal. To score the CRTES-R, the numerical ratings from the items that comprise each subscale are summed. These scores range from 0-72, with 0-14 representing low distress, 15-27 representing moderate distress, and 28 and higher representing high distress. A score of 28 or higher is recommended for a diagnosis of PTSD. There are no published psychometric data for the current 23-item CRTES-R; however, an earlier version of the measure,

the CRTES, exhibited fair to good internal consistency (alphas = .70 to .85; Jones, Ribbe, & Cunningham, 1994).

The CRTES-R is based on the Horowitz Impact of Events Scale (Horowitz, 1979), a well-known measure for assessing PTSD symptomatology in adults. Additionally, the measure is brief, with only 23 items and is available without cost from the authors; however, the reliability and validity of the CRTES-R have yet to be established. The wording of certain items is also a potential problem. While the measure is said to be designed for use with children ages 6-18 years, the Flesch-Kincaid reading level (Flesch, 1948; Kincaid, Fishburne, Rogers & Chissom, 1975) is equivalent to grade 3.8 and thus children at the younger end of this spectrum may have difficulty with the wording and with concepts assessed (National Child Traumatic Stress Network, 2011).

Child Report of Posttraumatic Symptoms. The Child Report of Posttraumatic Symptoms (CROPS; Greenwald & Rubin, 1999) is a 26-item, self-report measure designed for use with children ages 7 to 17 years. The CROPS assesses a broad range of post-traumatic symptoms, with or without an identified trauma. It is designed to be used as a screener for PTSD symptoms and can also be utilized to measure changes in symptoms over time. Questions are rated on a three-point scale from 0 (*none*) to 3 (*lots*). Good test-retest reliability has been established for the CROPS with a Pearson product moment correlation of .80 with a 42-day interval between administrations. The measure has also exhibited good to excellent internal consistency with alpha coefficients for subscales ranging from .80 to .92 (Greenwald & Rubin).

The CROPS assesses a broad range of posttraumatic symptoms, is brief, and uses simple language. Additionally, the measure can be freely copied after the initial purchase; however, the measure does have its limitations. No norms are available for the CROPS. Also, more research

is needed examining the use of the measure with clinical samples. According the National Child Traumatic Stress Network (2011) the majority of studies have not yet been published or subjected to full peer review. This is particularly troublesome given the fact that the original publication of the measure occurred in 1999.

Trauma Symptom Checklist for Children. The Trauma Symptom Checklist for Children (TSCC; Briere, 1996) is a 54-item self-report measure of posttraumatic stress and related psychological symptoms in children ages 8-16 years. The TSCC includes two validity scales, Underresponse and Hyperresponse, as well as six clinical scales: Posttraumatic Stress Disorder, Anxiety, Depression, Anger, Dissociation, and Sexual Concerns. Responses are rated on a 4-point scale from 0 (*never*) to 3 (*almost all of the time*). There is also a 44-item alternate version of the TSCC (the TSCC-A) that does not include Sexual Concerns items. The TSCC provides T scores based on gender as well as age grouping. It has shown good internal consistency ($\alpha = .89$) for the total scale score. Individually, the measure has exhibited fair to good internal consistency for each of its subscales (alphas ranging from $.77 - .89$).

The TSCC appears to be sensitive to the effects of therapy for abused children (Feindler et al., 2003). Additionally, the scale was standardized with a large sample of ethnically diverse children ($n = 3,008$), which aids in the interpretation and generalization of scores. One concern regarding the TSCC is that its items do not fully overlap with DSM-IV symptom clusters for PTSD. The Posttraumatic Stress subscale consists of mainly intrusions symptoms, and therefore does not comprehensively assess DSM-IV criteria for PTSD (Ohan, Myers, and Collett, 2002).

UCLA PTSD Reaction Index for DSM-IV-Child Version. The UCLA PTSD Reaction Index for DSM-IV (UPRID; Pynoos, Rodriguez, & Steinberg, 1998) is a revision of the widely used and researched Child PTSD Reaction Index (CPTS-RI; Nader, Pynoos, Fairbanks, &

Fredrick, 1990). The UPRID is available in three versions – child, adolescent, and parent – and can be used as an interview or as a self-report measure. The child version is a 49-item measure assessing exposure to traumatic events and DSM IV PTSD diagnostic criteria. The first 13 items assess exposure to different traumatic stressors and are rated as either “yes” or “no”. These questions are followed by a single item that asks children to select the experience that bothers them most and rate how bothersome it was for them, using a 3-point scale (1 = A little; 2 = Somewhat; 3 = A lot). The next 13 items assess the children’s responses at the time of the trauma. These items are rated as either “yes” or “no”. The final 22 items assess the frequency of PTSD symptoms during the past month rated on a Likert-type scale rated from 0 (*None of the time*) to 4 (*Most of the time*). The UPRID provides a PTSD diagnosis as well as symptom severity score. A cutoff score of 38 or greater has been shown to have the greatest sensitivity and specificity for detecting PTSD (Rodriguez et al., 2001). This measure has shown excellent internal consistency (alpha = .90) and good test-retest reliability (r = .84; Steinberg, Brymer, Decker, & Pynoos, 2004), although the test-retest interval was not reported.

The UPRID is based on the CPTS-RI, which has extensive research support and has been used in numerous published research studies (Cohen & Mannarino, 2004). The measure is suitable for children of varying ages and traumatic experiences (Ohan, Myers, & Collet, 2002). Although the UPRID appears to have good reliability and validity, it is difficult to evaluate the instrument’s psychometric properties because the literature seems to treat results of CPTS-RI psychometric testing as sufficient to evidence similar (untested) performance of the UPRID (Fletcher, 2007; Steinberg et al., 2004;). Additionally, the UPRID has undergone several revisions, and the few reported psychometric properties uniquely associated with this instrument appear to be based on various iterations (Wilson & Keane, 2004). Another limitation of the

UPRID lies in the fact that it asks children to indicate whether or not they have experienced a variety of traumatic events, but limits the assessment of symptom criteria to the one most distressing event. This could be problematic for children who have experienced multiple traumas.

The Child PTSD Symptom Scale. The CPSS is a youth version of the Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997), a well-validated measure used for the assessment of PTSD severity and diagnosis in adults. In order to make the PDS suitable for children, the language was modified to be developmentally appropriate in facilitating children's understanding of the items (Foa et al., 2001). The CPSS is designed to assess PTSD symptom severity and diagnosis in children and adolescents, ages 8 to 18, who have experienced a traumatic event. It is a brief 23-item self-report measure consisting of two parts. The first section comprises 16 items that map onto DSM-IV criteria of PTSD for children and adolescents. The questions assess PTSD symptom severity using a 4-point Likert-type response scale (ranging from "not at all" to "almost always") and include items from each of the three PTSD symptom clusters: avoidance, reexperiencing and hyperarousal. The second section assesses functional impairment using yes and no responses. According to the authors (Foa et al., 2001) the items were selected to represent the major areas of life functioning for a child.

The 7 functional impairment items are scored as (0) *no* or (1) *yes* and provide a severity of impairment score ranging from 0 to 7, with higher scores indicating more impairment. The 17 symptom items provide a total symptom severity score ranging from 0 to 51, with higher scores indicating more symptom severity. Severity scores for each of the three symptom groups (reexperiencing, avoidance, and hyperarousal) are also calculated. In order to determine if a child meets PTSD symptom criteria, the 17 items are scored dichotomously to provide a

diagnostic status, with any symptom endorsement included as an affirmative response in this calculation.

The CPSS demonstrated good internal consistency for its Total Score, with Cronbach's alpha reported at .89 (Foa et al., 2001). The subscales demonstrated fair to good internal consistency, with coefficient alphas reported at .80 for Reexperiencing, .73 for Avoidance, and .70 for Hyperarousal. The subscales of the CPSS demonstrated high intercorrelations with coefficient alphas of .89 for the total score, .80 for reexperiencing, .73 for avoidance, and .70 for arousal. In terms of stability, the CPSS demonstrated good test-retest reliability over a period of two weeks for the total scale score ($r = .84$) as well as for the reexperiencing ($r = .85$) and arousal ($r = .76$) subscales. However, the avoidance subscale demonstrated questionable stability ($r = .63$).

The CPSS is concise, has straightforward administration and scoring, and is available without cost; however, the measure does not have extensive psychometric validation. The standardization sample used in the preliminary validation study of the CPSS (Foa et al., 2001) was small, with only 75 participants. The sample was also predominantly Caucasian, with ethnic minorities severely underrepresented. This imbalance of ethnicity makes it difficult for the outcomes of the study to be generalized to ethnic minorities.

III. CPSS SCALE ADAPTATION AND PRELIMINARY VALIDATION

Scale Adaptation. To adapt the PDS for use with children, its items were modified to include developmentally appropriate language in order to enhance children's understanding of the questions (Foa et al., 2001). The PDS had been widely researched and used with adults (Foa, Rigs, Dancu, & Rothbaum, 1993; Foa et al., 1987; Foa & Tolin, 2001; Naifeh, Elhai, Kashdan, & Grubaugh, 2008). However, when using the modified version of the PDS it was important to consider that developmental differences between children and adults may affect the expression of PTSD symptoms. Therefore, it was vital to establish psychometrically that the PDS had been adequately adapted for use beyond the adult population on which it was initially validated (Blazina, Pisecco, & O'Neil, 2005).

Test Construction. No information could be found regarding test construction for the CPSS apart from the indication that it is a child version of the PDS. The only study of the psychometric properties of the CPSS was conducted by Foa et al. in 2001. The standardization sample and psychometric properties described below refer to this study.

Standardization Sample. The CPSS was validated using a sample of 75 children and adolescents, ages 8 to 15 years, who had experienced a major earthquake in Northridge, California two years earlier. The mean age was 11.8 years. Forty-one percent of the participants were boys. Eighty-nine percent of the participants were Caucasian.

Validity of the CPSS. To investigate potential differences in terms of age, children were

divided into two groups based on a median split of the sample (12 years). No significant differences between age groups were found for the CPSS total and subscale scores. With respect to convergent validity, the CPSS was correlated with the self-report version of the Child Posttraumatic Stress Disorder Reaction Index (CPTSD-RI; Pynoos et al., 1987). The CPTSD-RI is the predecessor of the UPRID described earlier. Items are rated on a five point Likert-type scale, ranging from “*none*” to “*most of the time*”. The CPTSD-RI provides a PTSD symptom frequency score ranging from 0 to 81, with higher scores indicating higher frequency. Based on the total scale score, the CPTSD-RI also provides categorization of the degree of the PTSD, from “*doubtful*” to “*very severe*”.

Symptom severity scores for the total CPSS as well as the three symptom clusters were compared with severity scores on the CPTSD-RI. The mean CPSS total scale score and all subscale scores for children with high scores on the CPTSD-RI (“*moderate*” to “*very severe*” PTSD symptoms) were significantly higher than the mean scores for children with low scores (“*doubtful*” to “*mild*” PTSD symptoms). Children with high scores on the CPTSD-RI had a mean CPSS total score of 19.1, a mean Reexperiencing score of 5.3, a mean Avoidance score of 6.8, and a mean Arousal score of 6.3. Children with low scores on the CPTSD-RI had a mean CPSS total score of 5.8, a mean Reexperiencing score of 1.4, a mean Avoidance score of 2.1, and a mean Arousal score of 2.1. A comparison of the CPSS total scale score and the CPTSD-RI severity rating produced a Pearson product-moment correlation coefficient of 0.80, indicating a high degree of correlation between the two measures.

Regarding discriminant validity, the Depression Self-Rating Scale for Children (DSRSC; Birlleson, 1981; Birlleson, Hudson, Buchanan & Wolff, 1987) and the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) scores were correlated with CPSS total scale and subscale scores. The DSRSC is a 21-item self-report measure that assesses symptoms of depression in children and adolescents. Items are rated on a three point Likert-type scale and are summed for a total scale score. The MASC is a 39-item self-report measure that assesses anxiety in children and adolescents. The MASC provides a total score as well as four subscale scores, including physical symptoms, social anxiety, harm avoidance, and separation anxiety. The CPSS' correlations with depression ($r = .58$) and anxiety ($r = .48$) were significantly lower than its correlation with the CPTSD-RI ($r = .80$). Given that anxiety and depression are states related to PTSD, moderate correlation is expected; however, a much higher correlation was observed between the CPSS and the other measure of PTSD, the CPTSD-RI.

IV. PRESENT STUDY

The current study attempts to address the need for valid and reliable instruments in childhood PTSD assessment research by investigating the psychometric properties of the Child PTSD Symptom Scale. Specifically, the study will examine the convergent and divergent validity, as well as factor structure of the CPSS. Results from this study will contribute to the child PTSD assessment literature at large, as well as specifically inform researchers and clinicians regarding the soundness of a frequently used child self-report measure of posttraumatic symptomatology.

The CPSS was chosen as the focus of this study for a number of reasons. The measure was developed by Edna Foa, one of the leading researchers in the field of PTSD, and is a youth version of a well-validated measure. The measure is concise, is available without cost, and has a great deal of utility for research as well as clinical applications. Questions map directly onto all PTSD symptoms in the three clusters of the DSM-IV (reexperiencing, avoidance, and hyperarousal) and the measure provides a PTSD symptom severity score as well as an assessment of functional impairment. The CPSS has shown promising initial psychometric properties and is frequently cited in the literature; however, more research is needed in order to establish the reliability and validity of this instrument. Therefore, the present study seeks to expand upon previous research conducted with the CPSS through systematic examination of its psychometric properties and subscales in a school-based community sample of children. An

additional goal of the present study is to provide normative data, which have not yet been reported, to allow for the derivation of T scores, which will increase the clinical utility and interpretability of the instrument.

Based on the subscales as designed by the authors (Foa et al., 2001), as well as the framework of DSM-IV symptom clusters for PTSD symptomatology, it was hypothesized that (a) a CPSS 3-factor model will be supported via exploratory factor analysis (EFA) (b) the 3-factor structure of the CPSS would exhibit factor invariance across boys and girls as well as across younger and older children, and (c) reliability of the CPSS subscales would be supported via adequate internal consistency.

V. METHODS

Participants

Participants were 780 adolescents recruited from 6 public schools in grades 6 – 12 in Northern Mississippi. The mean age of the sample was 14.51 years ($SD = 1.86$, range = 11 – 18) and the group consisted of 51.2% boys. The ethnic makeup of the sample was 90% Caucasian, 6% African American, 2% Multiethnic, and 2% other ethnicities. Inclusion in the present study required that participants have available CPSS data with no missing variables. Of the 780 CPSS surveys completed, 763 (98%) had complete data with no missing values and were thus included in the present study.

Measures

Child's Reaction to Traumatic Events Scale Revised (CRTES-R; Jones, 1994, 1995, 2002). See the description of the CRTES-R as described above in the report of available child PTSD self-report measures.

Revised Child Anxiety and Depression Scale, Short Form (RCADS-SF; Ebesutani et al., in press). The original RCADS (Chorpita, Yim, Moffit, Umemoto, & Francis, 2000) is a 47-item, child self-report questionnaire designed to measure anxiety and depression. It provides a total anxiety and depression scale as well as five anxiety disorder related scales and a major depressive disorder scale. Children rate how often each item applies to them with items rated on a 4-point Likert-type scale from 0 (*never*) to 3 (*always*), and symptom accounts are converted to

T scores for each subscale. The shortened version of the measure, constructed via Item Response Theory, retains 25 items from the original version (including the entire Depression scale) and yields two subscale scores for anxiety and depression.

Child Disgust Scale (CDS; Oletunji, 2011). The CDS is an instrument being developed in a leading research lab that examines disgust. It is an adaptation of a widely disseminated measure of disgust typically used in research in adults (the Disgust Scale – Revised; Olatunji et al., 2007). Respondents are asked to respond to disgusting stimuli in terms of their personal level of disgust along a three-point scale. Early psychometrics for this instrument are promising, and ensuing publication is expected to occur in the next year. Reliability for the instrument as a whole was 0.74.

Procedure

An addendum was submitted to the Internal Review Board of The University of Mississippi in order to add the CPSS and CRTES-R to a previously approved school mental health screening project for Dr. John Young. Recruitment for this study was conducted through public schools in Northern Mississippi.

Participating schools sent passive consent forms with instructions for how to decline participation to parents one week prior to scheduled instrument administration. For students whose parents did not decline participation, verbal assent was obtained in a group format in their classroom prior to data collection. Any students professing a lack of willingness to complete measures were asked to read quietly at their desk until testing was completed. Survey packets were delivered to each school by a facilitator (either a University of Mississippi psychology graduate student or an adjunct research professor). The facilitator remained at the school during survey administration in order to answer any questions and collected all completed surveys.

Feedback for Schools. Full results of the surveys with a breakdown by school, grade,

ethnicity, and gender were provided to the school district superintendent, special education coordinator, and curriculum coordinator. A full, easy to understand presentation was provided that reflected 1) data and 2) suggestions for how to integrate this data into ongoing educational efforts. To the extent requested follow up meetings and professional development will be provided, including such things as administrative feedback, program evaluation, teacher trainings, and policy consultation.

VI. RESULTS

Data Preparation

Prior to data analyses, Mahalanobis Distance was calculated individually for each instrument and outliers were deleted. The criterion for being considered an outlier was a probability of $< .001$ that the case belongs to the group based on its distance from the group mean. A total of 34 cases were excluded, resulting in a final sample size of 729 for the analyses that follow.

Data Analysis

In order to examine potential differences in the manifestation of PTSD symptoms according to age differences, children were divided into younger and older groups based on middle school (grades 6-8) versus high school (grades 9-12). To investigate any differences in total CPSS score across gender and age, a 2 x 2 (gender by age group) analysis of variance (ANOVA) was conducted. No significant differences between age groups were observed. However, gender differences were noted ($p < .01$). Girls reported significantly greater total CPSS scores (Mean = 12.62, SD = 4.35) than did boys (Mean = 11.07, SD = 4.49).

Model Fit. Items from the total symptom scale were subjected to an initial Exploratory Factor Analysis (EFA) with an oblique rotation. An EFA was chosen because the factor structure of CPSS had never been examined, and an oblique rotation was chosen because correlation among items was expected (Fabrigar, Wegener, MacCallum, & Strahan, 1999). As

recommended by Meyers, Gamst, and Guarino (2006), the number of factors extracted was determined by examining the scree plot and factor loadings associated with the apparent best-fit solution. Using the criterion of eigenvalues greater than 1.0 a single-factor solution was discerned, which explained 47.3% of the total item variance. The eigenvalue for the extracted factor was 7.58 with the eigenvalue of the second component at 0.96 and the third component at 0.82. Data for individual items' factor loadings are presented in Table 1. The posited 3-factor structure was not supported and thus analyses of the individual subscales (Intrusion, Avoidance, and Hyperarousal) were not included in the present study.

The fit of the encountered factor structure was examined using the FACTOR program (Lorenzo-Seva & Ferrando, 2006). This program was selected because it provides several fit indices for EFA including chi-square goodness of fit, the comparative fit index (CFI: Bentler, 1990), the goodness of fit index (GFI; Jöreskog & Sörbom, 1981), the adjusted goodness of fit index (AGFI; Jöreskog & Sörbom, 1989), and the root mean square error of approximation (RMSEA; Steiger, 1990). According to conventional standards, a ratio of χ^2 to the degrees of freedom that is equal to or less than 2.0 suggests that the model is a good fit (Byrne, 1989). The CFI, GFI, and AGFI indices are considered suitable at .90, and good at .95. The RMSEA is considered to be suitable at values lower than .10 and good below .05 (Thompson, 2004). Although the chi-square for the encountered factor structure was statistically significant, $F(1, 104) = 493.48, p < .001$, this statistic can be biased by large sample sizes and thus it was not unexpected to see less than optimal fit. The model generated a CFI value of 0.92, a GFI value of 0.99, an AGFI value of 0.99, and an RMSEA value of 0.05, all indicating adequate fit.

Reliability and Validity

Internal Consistency. The CPSS total symptom score as well as the functional

impairment scale demonstrated high internal consistency, with alpha coefficients of 0.93 and 0.90 respectively.

Convergent Validity. In order to further investigate the utility of the CPSS as a screening tool for PTSD symptomatology, bivariate correlations of the CPSS total symptom score were examined with convergent and divergent validity criteria. Convergence with the validity criteria was evidenced in the following two ways. First, a bivariate correlation found significant correlation between the CPSS and the CRTES-R ($r = .60, p < .001$). Second, means and standard deviation scores were calculated separately for each of 2 subgroups: (a) for those with a “high” level of distress as determined by scores on the CRTES-R, and (b) for those with “low” to “moderate” levels of distress according to the CRTES-R. The mean CPSS score of children with high scores on the CRTES-R was 14.32 (SD= 3.81), which was significantly higher than the mean score of 9.63 (SD = 3.96) from children with low to moderate scores on the CRTES-R ($t(677) = 41.55, p < .001$).

Divergent Validity. It was hypothesized that the CPSS total symptom score would correlate more highly with the CRTES-R than with the CPS total disgust score. As predicted, correlation with disgust ($r = -0.05$,) and was lower than correlation with the CRTES-R.

PTSD Diagnosis According to CPSS Symptom Criteria.

In order to determine if a child met PTSD symptom criteria given the original recommendations for using the CPSS, the 16 symptom items were scored dichotomously to provide a diagnostic status. Any symptom endorsement (i.e., a score above 0) was included as an affirmative response in this calculation. When evaluated using the cutoff score of 11 for a diagnosis of PTSD, as recommended by the instrument’s authors (Foa et al., 2001), 29.3% of the

sample reported symptoms consistent with a PTSD diagnosis. When utilizing the cutoff score of 15, as recommended by the International Society of Traumatic Stress Studies (2011), 8.6% of the sample met criteria for PTSD diagnosis. A third analysis was executed in which T-scores were calculated using the full range of data collected (i.e., continuous scoring) in the entire sample. Scores above $T = 70$ were considered to be elevated for PTSD, and thus reflective of fulfilling diagnostic criteria. Utilizing this method of scoring, 1.9% of the sample met criteria for PTSD diagnosis.

Normative Data. To increase the utility of the CPSS for the purpose of referencing specific child scores to a community sample, normative data, separated by gender and grade level, are presented in Table 2. Looking at the table, it is apparent that mean CPSS scores for girls are higher than for boys, with the most pronounced difference in grades 6 through 8.

VII. DISCUSSION

The purpose of this study was to contribute to the body of research on the assessment of childhood PTSD by further investigating the psychometric properties of the CPSS. The CPSS was originally developed to include a total symptom scale comprising 3 subscales (Intrusion, Avoidance, and Hyperarousal). Results from an EFA conducted in the present study suggested substantial modification of the previously posited structure. Specifically, the posited structure of three subscales comprising the symptom severity scale was not confirmed. In fact, one single factor was suggested by the EFA. The finding of a single factor structure suggests that the items are largely reflective of a single common latent variable and thus the most appropriate scoring procedure may be unidimensional rather than multidimensional (Ebesutani et al., in press). Furthermore, the finding of a single factor structure may indicate that the construct of PTSD is not a multidimensional construct, but rather a unidimensional construct comprising one underlying PTSD factor common to all symptoms. The finding of a single factor model may suggest that the CPSS does not adequately assess the individual domains of intrusion, avoidance, and hyperarousal as set forth by the DSM. Alternatively, it may also indicate the inadequacy of categorical separation of PTSD symptom criteria. Fit indices for the encountered single factor model were adequate and although every index did not suggest optimal fit, it is important to note that it is rare for any instrument to do well on all indices.

Although the 3-factor structure of the CPSS was not confirmed, the measure

demonstrated fairly positive psychometric results in the present sample of school-based adolescents. Specifically, both the total symptom as well as functional impairment scales demonstrated excellent internal consistency. The total symptom score also exhibited good convergent validity and divergent validity, as demonstrated by its correlations with the CRTES-R and CDS.

It is important to note that comparing diagnoses obtained from the CPSS to those derived from a clinical interview such as the Clinician Administered PTSD Scale for Children and Adolescents (CAPS-CA; Nader et al., 1996) would have represented a more rigorous test of the accuracy of the PTSD diagnosis obtained using the CPSS. However, due to logistical difficulties the administration of one-on-one interviews was not feasible for this study. Instead, the analogue method of dichotomous scoring with a cutoff score of 11 resulted in a prevalence rate that is considerably higher than findings reported in epidemiological studies of PTSD in the general child population; and while the prevalence rate encountered when using the cutoff score of 15 is markedly lower it is still in the upper realm of typically reported rates (Elklit, 2002; Gioconia et al., 1995). In contrast, the utilization of T scores as the criterion for diagnostic status resulted in somewhat lower than typically reported findings (Elklit, 2002; Gioconia et al., 1995). These results may suggest that dichotomous scoring could artificially inflate the percentage of children qualifying for a PTSD diagnosis. With dichotomous scoring, any endorsement, regardless of severity, is weighted equally, thus failing to incorporate the symptom severity of individual items into symptom severity total scores. Given the wide ranging results based on scoring method or cutoff score used, future research would benefit from investigation of appropriate scoring for the CPSS by utilizing a Receiver Operating Curve (ROC) analysis (Green & Swets, 1966) or other appropriate analyses to determine optimal cutoff scores.

Several limitations of the present study should be noted. First, the sample used in the study included only ages 11 to 18. The CPSS is designed for use with ages 8 to 18 and thus future studies should include a wider age range. Second, although the sample for the study was large, it was quite homogeneous with respect to ethnicity. Future studies should examine the psychometric properties of the CPSS with more diverse samples. Third, the first question of the CPSS, which asks the child to name the specific traumatic event experienced, was omitted from surveys administered in the present study due to school district concerns regarding reporting of specific traumatic experiences. The exclusion of this item brings into question the validity of PTSD diagnoses, as DSM-IV (American Psychiatric Association, 2000) diagnostic criterion A (exposure to a traumatic event that involved actual or threatened death or serious injury) may not have been met in all cases. Future studies should include identification of a specific traumatic experience in order to more accurately investigate the validity of the CPSS PTSD diagnosis.

Despite the noted limitations, the present study contributed to the psychometric knowledge regarding the CPSS. It broadened the scope of investigations by including a population of school-based adolescents and also provided normative data to increase the utility of the measure for referencing specific child scores in relation to a community sample. This investigation highlights a number of important issues to consider in future studies. Future research will benefit from examination of the CPSS in a greater range of contexts (e.g. ethnic minority samples, other communities, other languages), investigation with more stringent convergent validity criteria (e.g. in comparison to a clinical interview), and investigation of the suitability of the measurement construction in light of evolving PTSD diagnostic criteria proposed for the DSM-V.

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List of Appendices

Appendix: A

Table 1

Factor Loadings for Exploratory Factor Analysis with Varimax Rotation of CPSS Total Symptom Scale

Item	Factor Loading
Having upsetting thoughts or images about the event that came into your head when you didn't want them to	.76
Having bad dreams or nightmares	.59
Acting or feeling as if the event was happening again (hearing something or seeing a picture about it and feeling as if you are there again)	.71
Feeling upset when you think about or hear about the event (for example, feeling scared, angry, sad, guilty, etc.)	.75
Having feelings in your body when you think about or hear about the event (for example, breaking out into a sweat, heart beating fast)	.72
Trying to avoid activities, people, or places that remind you of the traumatic event	.68
Not being able to remember an important part of the upsetting event	.53
Having much less interest in doing things you used to do	.63
Not feeling close to people around you	.69
Not being able to have strong feelings (for example, being unable to cry or unable to feel happy)	.63
Feeling as if your future plans or hopes will not come true (for example, you will not have a job or get married or have kids)	.66
Having trouble falling or staying asleep	.69
Feeling irritable or having fits of anger	.71
Having trouble concentrating (for example, losing track of a story on the television, forgetting what you read, not paying attention in class)	.67
Being overly careful (for example, checking to see who is around you and what is around you)	.63
Being jumpy or easily startled (for example, when someone walks up behind you)	.65

Note. CPSS = Child PTSD Symptom Scale.

Appendix: B

Table 2

Ranges, means, and standard deviations for the CPSS by grade and gender

Gender	Grade	<i>N</i>	Min	Max	Mean	S.D.
Boy	6 th	34	1	20	10.62	4.88
	7 th	65	0	18	10.04	4.43
	8 th	71	0	23	11.42	4.93
	9 th	66	4	20	11.74	4.10
	10 th	62	0	22	10.94	4.48
	11 th	41	5	22	11.43	4.01
	12 th	33	3	21	11.32	4.39
	All Boys	372	0	23	11.02	4.52
Girl	6 th	21	5	21	13.43	3.96
	7 th	58	2	21	12.01	4.16
	8 th	83	3	22	13.37	4.00
	9 th	59	2	22	12.85	4.57
	10 th	54	0	21	11.87	4.82
	11 th	37	6	20	12.27	4.01
	12 th	43	0	23	12.40	4.81
	All Girls	355	0	23	12.64	4.29
Total Sample		729	0	23	11.84	4.50

Note. CPSS = Child PTSD Symptom Scale.

Appendix: C

Survey packet instructions and demographic questions:

These questions will ask about some things that you think, feel, and do. We are asking lots of students all over the state to get an idea about what kinds of things might be hard for kids. We WILL NOT ask for your name, so nobody will ever be able to trace your answers back to you. Please be sure to answer all the questions as honestly as possible. Thank you very much.

If you believe you are having trouble with some of these things, please tell your parents, a teacher, or a school counselor. These people are here to help, and talking about what is bothering you may cause things to get better.

1. What grade are you in? _____
2. What is your gender? __Boy ___Girl
3. What is your race or ethnicity?
 - a. African American/Black
 - b. Asian
 - c. Caucasian/White
 - d. Hispanic/Latino/Latina
 - e. Other

Appendix: D

Child PTSD Symptom Scale

Below is a list of problems that kids sometimes have after experiencing an upsetting event. Read each one carefully and circle the number (0-3) that best describes how often that problem has bothered you IN THE LAST 2 WEEKS.

Part 1

0	1	2	3
Not at all	Once a week or less/ once in a while	2 to 4 times a week/ half the time	5 or more times a week/almost always

- | | | | | |
|--|---|---|---|---|
| 1. Having upsetting thoughts or images about the event that came into your head when you didn't want them to | 0 | 1 | 2 | 3 |
| 2. Having bad dreams or nightmares | 0 | 1 | 2 | 3 |
| 3. Acting or feeling as if the event was happening again (hearing something or seeing a picture about it and feeling as if you are there again) | 0 | 1 | 2 | 3 |
| 4. Feeling upset when you think about or hear about the event (for example, feeling scared, angry, sad, guilty, etc.) | 0 | 1 | 2 | 3 |
| 5. Having feelings in your body when you think about or hear about the event (for example, breaking out into a sweat, heart beating fast) | 0 | 1 | 2 | 3 |
| 6. Trying not to think about, talk about, or have feelings about the event | 0 | 1 | 2 | 3 |
| 7. Trying to avoid activities, people, or places that remind you of the traumatic event | 0 | 1 | 2 | 3 |
| 8. Having much less interest in doing things you used to do | 0 | 1 | 2 | 3 |
| 9. Not feeling close to people around you | 0 | 1 | 2 | 3 |
| 10. Not being able to have strong feelings (for example, being unable to cry or unable to feel happy) | 0 | 1 | 2 | 3 |
| 11. Feeling as if your future plans or hopes will not come true (for example, you will not have a job or get married or have kids) | 0 | 1 | 2 | 3 |
| 12. Having trouble falling or staying asleep | 0 | 1 | 2 | 3 |
| 13. Feeling irritable or having fits of anger | 0 | 1 | 2 | 3 |
| 14. Having trouble concentrating (for example, losing track of a story on the television, forgetting what you read, not paying attention in class) | 0 | 1 | 2 | 3 |

- | | | | | | |
|-----|--|---|---|---|---|
| 15. | Being overly careful (for example, checking to see who is around you and what is around you) | 0 | 1 | 2 | 3 |
| 16. | Being jumpy or easily startled (for example, when someone walks up behind you) | 0 | 1 | 2 | 3 |

Part 2

Mark below if the problems you rated in Part 1 have gotten in the way with any of the following areas of your life DURING THE PAST 2 WEEKS.

- | | | | |
|-----|----------------------------------|-----|----|
| 18. | Doing your prayers | Yes | No |
| 19. | Chores and duties at home | Yes | No |
| 20. | Relationships with friends | Yes | No |
| 21. | Fun and hobby activities | Yes | No |
| 22. | Schoolwork | Yes | No |
| 23. | Relationships with your family | Yes | No |
| 24. | General happiness with your life | Yes | No |

Appendix: E

Child’s Reaction to Traumatic Events Scales – Revised

Below is a list of problems that kids sometimes have after experiencing something upsetting. Read each one carefully and check the box that best describes how often that problem has bothered you DURING THE PAST TWO WEEKS

	Not at all	Rarely	Sometimes	Often
1. I thought about it when I didn’t want to.				
2. I stopped letting myself get upset when I thought about it or was reminded of it.				
3. I tried not to remember.				
4. I had trouble falling asleep or staying asleep because pictures or thoughts about it came into my mind.				
5. I had strong feelings about it.				
6. I had dreams about it.				
7. I stayed away from things that reminded me of it.				
8. I felt like it did not happen or that it was unbelievable.				
9. I tried not to talk about it.				
10. I kept seeing it over and over in my mind.				
11. Other things kept making me think about it.				
12. I had lots of feelings about it, but I didn’t pay attention to them.				
13. I tried not to think about it.				
14. Any reminder brought back feelings about it.				
15. I don’t have feelings about it anymore.				
16. It was easy to make me angry and upset.				
17. Loud noises made me jump in surprise.				
18. I would feel like it was happening all over again.				

- 19. I had trouble keeping my mind on what I was doing.
- 20. Thinking about it made my heart beat faster.
- 21. Thinking about it made it hard for me to breathe.
- 22. Thinking about it made me sweat.
- 23. I kept checking to make sure nothing else bad would happen.

Appendix: F

Revised Child Anxiety and Depression Scale – Short Form

Please indicate how often each of these things happen to you. There are no right or wrong answers. Please refer to the following scale when answering:

	<u>NEVER</u>	<u>SOMETIMES</u>	<u>OFTEN</u>	<u>ALWAYS</u>
	A	B	C	D
1. I feel sad or empty.	A	B	C	D
2. I worry when I think I have done poorly at something.	A	B	C	D
3. I would feel afraid of being on my own at home.	A	B	C	D
4. Nothing is much fun anymore.	A	B	C	D
5. I worry that something awful will happen to someone in my family.	A	B	C	D
6. I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds).	A	B	C	D
7. I worry what other people think of me.	A	B	C	D
8. I have trouble sleeping.	A	B	C	D
9. I feel scared if I have to sleep on my own.	A	B	C	D
10. I have problems with my appetite.	A	B	C	D
11. I suddenly become dizzy or faint when there is no reason for this.	A	B	C	D
12. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).	A	B	C	D
13. I have no energy for things.	A	B	C	D
14. I suddenly start to tremble or shake when there is no reason for this.	A	B	C	D
15. I cannot think clearly.	A	B	C	D
16. I feel worthless.	A	B	C	D
17. I have to think of special thoughts (like numbers or words) to stop bad things from happening.	A	B	C	D
18. I think about death.	A	B	C	D
19. I feel like I don't want to move.	A	B	C	D

NEVER

A

SOMETIMES

B

OFTEN

C

ALWAYS

D

20. I worry that I will suddenly get a scared feeling when
there is nothing to be afraid of. A B C D
21. I am tired a lot. A B C D
22. I feel afraid that I will make a fool of myself in front
of people. A B C D
23. I have to do some things in just the right way to stop bad
things from happening. A B C D
24. I feel restless. A B C D
25. I worry that something bad will happen to me. A B C D

Appendix: G

August 15, 2011

Hello Parents,

We will be handing out a brief (10 – 20 minute) survey during class time on [DATE]. This survey will ask questions about things your child might have experienced, including anxiety, anger, and difficult experiences. All surveys will be completed without names attached, so no one can ever match your child's answers to him/her personally. As concerned parents and citizens, we want to make sure that our children's educational, behavioral, and emotional development are supported by attending to these needs as much as we can. We feel that in order for any child to have optimum learning, it is critical that they are physically and mentally healthy. That is why we have partnered with the University of Mississippi to bring this survey to our school. The information collected will be used by the university for research focused on improving mental health and the educational process for young people everywhere (but especially here at home in Mississippi). The results of that research will be made available to our school through a feedback meeting, as well as to any parent who asks.

Although there is no direct benefit to any one person taking this survey, the information collected will help support a better educational environment for everyone. What we learn may also help to improve the existing services offered by school nurses, health educators, guidance counselors, teachers, administrators, and all other people with our children's best interests at heart. It is possible that some students may feel uncomfortable answering some of the questions. To minimize this risk all students will be told that they are free to skip any questions they want or discontinue at any time. If for some reason you would prefer that your child not participate in this survey, please return the attached "opt out" slip to your school's front office. If you do not return this slip refusing permission, your child will be asked to complete the survey. Your family's participation is completely voluntary, and if you refuse there will not be a penalty of any kind. If you have any questions or concerns, please do not hesitate to call your school, Dr. Young, or the University's Institutional Review Board (which approved this survey). Their contact information is listed at the bottom of this page, and they will be happy to answer any questions you might have.

Sincerely,

Individual school principal and/or superintendent

Affiliation

Email

Phone

John Young, Ph.D.
University of Mississippi

Office of Research and Sponsored Programs
University of Mississippi

**PARENT REQUEST TO OPT OUT
OF SURVEY PARTICIPATION**

STUDENT'S NAME:	
GRADE LEVEL:	
HOMEROOM TEACHER:	
SCHOOL SITE:	

_____ I do NOT want my child to participate in this project.

Parent/Guardian Signature

Date

***THIS FORM MUST BE RETURNED TO THE SCHOOL COUNSELOR
NO LATER THAN Month, Day Year.***

VITA

NAME: Regan W. Stewart

EDUCATION:

B.A.	Spanish (highly distinguished) Business (minor) College of Charleston	May, 2003
M.A.	Early Childhood Education College of Charleston	December, 2006
M.A.	Clinical Psychology University of Mississippi	August, 2012
Ph.D. (Currently pursuing)	Clinical Psychology University of Mississippi	Currently Enrolled

LICENSURE:

South Carolina Board of Education and Mississippi Board of Education: Certified to teach Early Childhood Education (grades preschool – 3rd), Spanish (grades kindergarten – 12th) and ESOL (grades preschool – 12th).

PROFESSIONAL POSITIONS:

Teacher of English for Speakers of Other Languages (August, 2003 – June 2010), Berkeley County School District, Moncks Corner, South Carolina

RESEARCH EXPERIENCE:

Research Assistant, The Citadel, Department of Psychology, August 2009 – July, 2010, Supervisor: William G. Johnson, Ph.D.

Research Assistant, University of Mississippi, August 2010 – Present, Supervisor: John Young, Ph.D.

TEACHING/TRAINING EXPERIENCE

Small Group Facilitator, “Intercultural Communication Training for ROTC Students.” Led small group discussion for 4th year ROTC students. University of Mississippi, University, MS., October 2010 – May 2011.

Instructor, “Psyc 100 Introduction to the Major”. Semester-long undergraduate course providing an introduction to the Department of Psychology, its faculty and courses, with an emphasis on career planning and student development. University of Mississippi, University, MS, Spring 2012.

GRANTS FUNDED:

School Resource Grant for E-Books, Sylvan-Dell Publishing, September 2009 – June 2010

PRESENTATIONS:

Johnson, W.G., **Stewart, R.W.**, Johnson-Pynn, J.S., Pynn, T.M. (2010, August). *Student attitudes toward war and peace*. Poster presented at the annual meeting of the American Psychological Association, San Diego, CA.

Johnson, L.R., Drescher, C., Bastein, G., Hankton, U., & **Stewart, R.W.** (2011) *Cross cultural communication and the therapeutic relationship*, Diversity Colloquia Series, Department of Psychology, University of Mississippi.

Stewart, R.W., Drescher, C.F., Maack, D., & Young, J. (2012, November). *The development and preliminary psychometric investigation of the Cyberbullying Questionnaire*. Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.

Stewart, R.W., Drescher, C.F., Young, J., & Hamblin, R.J. (2012, November). *Minority status and the experience of peer victimization: The importance of the racial/ethnic context of schools*. Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.

REPORTS TO AGENCIES

Stewart, R.W., Bastein, G., Hankton, U., & Johnson, L. (2011). *Immigration Facts and Resources for Psychologists in the United States*, Report prepared for the American Psychological Association, Committee on International Relations in Psychology.

PUBLICATIONS:

Stewart, R.W., & Darden, M. (in press). Sojourner. In K. Keith (Ed.) *Encyclopedia of Cross-Cultural Psychology*. Wiley-Blackwell.

Johnson, W.G., **Stewart, R.W.**, & Pussera, A. (in press). The perceptual threshold for overweight eating behaviors. *Eating Behaviors*.

HONORS AND AWARDS:

Dean’s List, College of Charleston, 2001-2003

Sigma Delta Pi (National Hispanic Honor Society), 2002

Certificate of Outstanding Achievement in Language Study, College of Charleston, 2003

Transfer Student Academic Achievement Award, College of Charleston, 2003

Certificate of Excellence for outstanding score on the Praxis Series Principles of Learning and Teaching: Grades K-6, ETS, 2006

PROFESSIONAL AND HONOR SOCIETIES:

American Psychological Association (student affiliate)

Association for Behavioral and Cognitive Therapies (student affiliate)

International Society for Traumatic Stress Studies (student affiliate)

Sigma Delta Pi, National Hispanic Honor Society